

example, a modem connection can be established over an ISDN line without the application being aware of a change in the transmission medium. The adapter 36, the hardware abstraction layer 40, the serial driver 42 and the adapter handler 44 function to configure a real-time data stream from the transmission medium to the real-time engine, and vice versa. The speed at which this data can be delivered, as well as the format of the data, is no longer limited by hardware devices that are employed in conventional hard-wired modems, particularly UARTs and the like. Rather, the data is delivered at a real-time rate, where it is handled by the computer's CPU.

The foregoing examples of the invention have been presented to facilitate an understanding of its features and operation. It will be appreciated, however, that the practical applications of the invention are not limited to these specific embodiments. Rather, the invention will find utility in any environment in which it is desirable to transmit and process data at real-time rates. Thus, while the invention has been described in the context of communications over a wide-area network, it can be used in any type of data acquisition system. The preceding description should therefore be viewed as exemplary, rather than restrictive. The scope of the invention is indicated by the following claims, rather than the foregoing description, and all changes which come within the meaning and range of equivalents thereof are intended to be embraced therein.

We claim:

1. A signal processing system for providing a plurality of realtime services to and from a number of independent client applications and devices, said system comprising:

a subsystem comprising a host central processing unit (CPU) operating in accordance with at least one application program and a device handler program, said subsystem further comprising an adapter subsystem interoperating with said host CPU and said device;

a realtime signal processing subsystem for performing a plurality of data transforms comprising a plurality of realtime signal processing operations; and

at least one realtime application program interface (API) coupled between the subsystem and the realtime signal processing subsystem to allow the subsystem to interoperate with said realtime services.

2. The signal processing system as set forth in claim 1, wherein said signal processing system receives and transmits a plurality of datatypes over a plurality of different wide area networks (WANs).

3. A signal processing system for providing a plurality of realtime services over a wide area network (WAN), said system comprising:

a telecommunications subsystem comprising a host central processing unit (CPU) and a wide area network interface, where said wide area network interface is comprised of a hardware interface to the network and driver software which executes on the host

a telecommunications subsystem comprising a host central processing unit (CPU) operating in accordance with at least one application program and a datastream handler program, said telecommunications subsystem further comprising a telecommunications adapter subsystem interoperating with said host CPU and said WAN;

a realtime signal processing subsystem for performing a plurality of transforms comprising a plurality of realtime signal processing operations; and

at least one realtime application program interface (API) coupled between the telecommunications subsystem

and the realtime signal processing subsystem to allow the telecommunications subsystem to interoperate with said realtime services.

4. The signal processing system as set forth in claim 3, wherein the realtime signal processing subsystem comprises:

at least one realtime communications module coupled to receive a plurality of communications commands from said applications programs via said datastream handler program and said realtime APIs, said realtime communications module in response to said communications commands issuing a plurality of requests for realtime services to at least one realtime service provider;

a translation interface program coupled to receive said requests for realtime services from said communications modules; and

a realtime processor including a realtime operating system interoperating with said translation program for executing a plurality of realtime operations comprising realtime functions in response to said requests.

5. The realtime data processing system as set forth in claim 4, wherein the translation interface comprises a plurality of realtime features to access a modem unit for communicating over said WAN.

6. The signal processing system as set forth in claim 3 further comprising a direct memory access (DMA) unit coupled between said realtime signal processing subsystem and a hardware abstraction portion of said telecommunications subsystem, said DMA unit providing for transfer of datablocks from said telecommunications adapter module to said realtime signal processing subsystem.

7. A signal processing system for providing a plurality of realtime services over a wide area network (WAN), said system comprising:

a telecommunications subsystem comprising a host central processing unit (CPU) operating in accordance with at least one applications program and a datastream handler program, said telecommunications subsystem further comprising a telecommunications adapter subsystem interoperating with said host CPU and said WAN;

a virtual realtime device enabling a plurality of realtime signal processing operations in accordance with at least one realtime service request issued by said applications program; and

at least one realtime application program interface (API) interoperating with the telecommunications subsystem and the virtual realtime device to enable the telecommunications subsystem to interoperate with said realtime signal processing operations.

8. The signal processing system as set forth in claim 7, wherein the virtual realtime device comprises a realtime translation interface program and virtual realtime engine, said virtual realtime engine enabling said realtime services by performing a number of data translation operations in accordance with said realtime service request and said realtime translation interface program.

9. The signal processing system as set forth in claim 8, wherein the virtual realtime engine comprises:

a realtime processor including a realtime operating system, and

a plurality of realtime function libraries interoperatively coupled with said realtime processor for providing a plurality of processing steps comprising said realtime signal processing operations,

whereby said virtual realtime engine responds to communications commands initiated by said applications programs.